UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103

August 6, 2001

SUBJECT: Technical Support Document for Approving the RACM Analysis for Pennsylvania's Attainment Plan for the Southeast Pennsylvania Portion of the Philadelphia-Wilmington-Trenton Ozone Nonattainment Area [PA117-4132]

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(3AP21)

I. Background

On December 16, 1999, EPA published a notice of proposed rulemaking on the attainment plan submitted on April 30, 1998 and supplemented on August 21, 1998 by the Commonwealth of Pennsylvania ("the Commonwealth" or "Pennsylvania") for the Philadelphia-Wilmington-Trenton Ozone Nonattainment Area ("the Philadelphia area"). That proposed rulemaking is entitled, "Approval and Promulgation of Air Quality Implementation Plans; Pennsylvania; One-Hour Ozone Attainment Demonstration for Philadelphia-Wilmington-Trenton Ozone Nonattainment Area" (64 FR 70428, December 16, 1999).

The attainment year is for the Philadelphia-Wilmington-Trenton area is 2005.

On July 19, 2001, the Commonwealth submitted a SIP revision consisting of a Reasonably Available Control Measures (RACM) analysis and revised attainment motor vehicle emissions budgets for the Southeast Pennsylvania (SE Pennsylvania) portion of the Philadelphia area.

II. What are the Requirements for Reasonably Available Control Measures (RACM)?

Section 172(c)(1) of the Act requires a State Implementation Plan (SIP) to contain reasonably available control measures (RACM) as necessary to provide for attainment. EPA has previously provided guidance interpreting the RACM requirements of 172(c)(1). See 57 FR 13498, 13560. In that guidance, EPA indicated its interpretation that potentially available measures that would not advance the attainment date for an area would not be considered RACM. EPA concluded that a measure would not be reasonably available if it would not advance attainment. EPA also indicated in that guidance that states should consider all

potentially available measures to determine whether they were reasonably available for implementation in the area, and whether they would advance the attainment date. Further, states should indicate in their SIP submittals whether measures considered were reasonably available or not, and if measures are reasonably available they must be adopted as RACM. Finally, EPA indicated that states could reject potential RACM measures either because they would not advance the attainment date, would cause substantial widespread and long-term adverse impacts, or for various reasons related to local conditions, such as economics or implementation concerns. The EPA also issued a recent memorandum on this topic, "Guidance on the Reasonably Available Control Measures (RACM) Requirement and Attainment Demonstration Submissions for Ozone Nonattainment Areas." John S. Seitz, Director, Office of Air Quality Planning and Standards. November 30, 1999. Web site: http://www.epa.gov/ttn/oarpg/t1pgm.html.

III. How Does This Submission Address the RACM Requirement?

The Commonwealth's attainment demonstration for the Philadelphia area addresses RACM through several aspects of the submittal.

In March of 1996, the Commonwealth convened a stakeholders group to examine a wide variety of stationary source and mobile source controls. The group finished in January 1997.

The potential stationary/area source controls included adoption of SCAQMD/CARB limits on source categories of volatile organic compound (VOC) emissions that are more stringent than the already adopted control technique guideline (CTG) limits (e.g., the following coating categories: fabric/paper, magnet wire, vinyl, miscellaneous metal parts, coil and metal furniture), limits on categories not covered a CTG (adhesives, motor vehicle refinishing, surface/cleaning degreasing, underground storage tank vents), rule effectivenss improvements, wood furniture coating, and beyond reasonable available control technology (RACT) control on major stationary sources of nitrogen oxides (NOx).

The mobile source control measures considered included the national low emission vehicle program, accelerated replacement of older buses with cleaner buses, CNG buses, and emissions based vehicle registration fees.

Mobile source controls also included control measures aimed at reducing vehicle trips, travel or congestion: land use planning, traffic flow improvements (signalization, ramp metering, speed limit restriction enforcement), improved mass transit, expanded parking at rail stations, telecommuting, bicycle lanes or access improvements at rail stations, parking taxes/surcharge, and increased gasoline taxes or miles travel based fees.

The state considered an extensive list of potential control measures and chose some measures which went beyond the federally mandated controls, which were found to be cost effective and technologically feasible. Pennsylvania has adopted and submitted rules for the following

categories examined by the stakeholders group[1]:

Pennsylvania has adopted and EPA has SIP approved Pennsylvania's rule for vehicle refinishing. The rule includes VOC content limits for motor vehicle refinishing coatings, application standards and storage and house keeping work practices. This rule goes beyond the Federal rule in content limits and application and work practices standards. Compliance with this rule was required in 2000. In the document entitled "Technical Support Document for the Proposed Approval of Pennsylvania's Post-96 Rate-of-Progress Plan for the Philadelphia Severe Ozone Nonattainment Area." in the Docket for the proposed action on Pennsylvania's Post-96 rate-of-progress plan for the Philadelphia severe ozone nonattainment area it is noted that the Commonwealth's rule "will achieve the 37% assumed reduction from the measure." For the ROP plan EPA was only crediting Pennsylvania's ROP plan with only the 37% reduction claimed in the ROP plan and not the full amount that the rule might actually get due to its additional requirements. Any additional reductions beyond the Federal rule requirements could be applied towards the additional reductions needed to support he attainment test. (See 64 FR 70428, December 16, 1999).

Pennsylvania has adopted and EPA has SIP approved Pennsylvania's rule requiring the sale of vehicles under the national low-emission vehicle program.

Pennsylvania has adopted and EPA has SIP approved Pennsylvania's rule to implement Phase II NOx controls under the OTC MOU[2]. This rule established a fixed cap on ozone-season NOx emissions from major point sources of NOx. The rule grants each source a fixed number of NOx allowances, applies state-wide, required compliance starting during the 1999 ozone season and will reduce Nox emissions both inside and outside the Philadelphia area.

Pennsylvania has adopted and EPA has proposed approval of Pennsylvania's rule to implement the NOx SIP call. The Pennsylvania rule requires compliance commencing with the start of the 2003 ozone season. (This measure was identified as Phase III control under the OTC MOU on NOx control in the RACM submittal because the evaluation occurred in 1996 well before the SIP call proposal.)

Pennsylvania has adopted rule effectiveness improvements into its post-1996 rate-of-progress plans through the attainment year of 2005 for the SE Pennsylvania portion of the Philadelphia-Wilmington-Trenton ozone nonattainment area.

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[1] Pennsylvania has adopted and EPA has SIP approved Pennsylvania's wood furniture coating rule. Pennsylvania adopted the rule to comply with the CTG requirement to apply RACT on major sources.

[2] See Ozone Transport Commission (OTC) "MOU 94-2 MEMORANDUM OF UNDERSTANDING dated 9/27/94 regarding Development of a Regional Strategy Concerning the Control of Stationary Source Nitrogen Oxide Emissions"

IV. Attainment Demonstration and Rate-of-Progress Reductions

A. Tier 2/Sulfur Benefits

On July 19, 2001, the Commonwealth submitted a SIP revision with revised attainment motor vehicle emissions budgets for the SE Pennsylvania portion of the Philadelphia area. These motor vehicle emissions budgets are for the year 2005 and incorporate the benefits of the Federal Tier 2/Sulfur-in-Fuel rule. The Commonwealth submitted these motor vehicle emissions budgets in response to our proposed action on the Commonwealth's attainment demonstration SIP for the Philadelphia area.

The motor vehicle emissions budgets in the July 19, 2001 submittal are compared in the following table to the previous budgets.

Clean Air Act Requirement & Year	Submittal Date	Mobile Vehicle Emissions Budget for NOx- Tons Per Day	Mobile Vehicle Emissions Budget for VOC- Tons Per Day
2005 Attainment	February 25, 2001	86.42	61.76
2005 Attainment	July 19, 2001	77.46	60.18

NOx: nitrogen oxides
VOC: volatile organic compounds

B. Attainment Year Modeled Emissions and Control Measures

The following table is a summary of the modeled 2005 attainment levels versus the 1990 base year.[3] The fourth column in the following table shows the reductions in emissions from the 1990 levels expected in the SE Pennsylvania portion of the Philadelphia interstate nonattainment area. The reductions take into account growth as well as emission reductions from measures adopted since 1990.

Pennsylvania Portion of the Philadelphia Area Emissions (tons/day)			
	1990 Base Year	**2005** Modeled	**Reductions**
NOx	487	317	170
VOC	669	428	241

[3] Source: See Table III.F-1in "Technical Support Document for the One-Hour Ozone Attainment Demonstration for the Pennsylvania Portion of the Philadelphia-Wilmington-Trenton Ozone Nonattainment Area (PA117-4095), November 26, 1999."

C. Ozone Response Factors[4]

The weight of evidence determination for the December 16, 1999 NPR concluded that an air quality shortfall of 3.9 ppb ozone. The modeling base design value was 153.6 ppb and the 1996 design value was 134 ppb for a change of 19.6 ppb. The change in emissions between 1990 and 1996 was 128 TPD NOx and 330 TPD VOC. This leads to an emission reduction factor of 16.84 tons VOC per ppb and 6.53 tons NOx per ppb. (330/19.6 for VOC and 128/19.6 = 6.53 for NOx).

D. Post-1996 Rate-of-Progress Plan

The post-1996 rate-of-progress plan computes emission reductions from 2005 uncontrolled projected levels versus the 1990 base year as used for the attainment plan modeling discussed above. For the 2005 uncontrolled case, the ROP plan uses the following projected emissions levels: 647 VOC and 469 NOx.

The plan is credited with reductions (relative to the 2005 uncontrolled) of 219 tons per day of VOC and 159 tons per day of NOx.[5] The ROP plan projects controlled emissions of 428 TPD VOC and 310 TPD of NOx.

V. Evaluation of the RACM Analysis

The state considered an extensive list of potential control measures and did not adopt a number of them which on their face are not RACM. All the measures considered were listed and numbered in a summary document entitled "SE Pennsylvania Ozone Stakeholders Group Control Measures Summary" contained within the submittal.

A number of the measures have been adopted. These are: Numbers 3 and 76. The Pennsylvania ROP SIP for 2005 includes 16.45 TPD of VOC emission reductions in rule effectiveness improvements out of a potential 21.7 TPD identified in the RACM analysis.

Measure numbers 13 to 23 address NOx emissions from stationary sources of NOx. The

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[4] Source: See Attachment 6 to "Technical Support Document for the One-Hour Ozone Attainment Demonstration for the Pennsylvania Portion of the Philadelphia-Wilmington-Trenton Ozone Nonattainment Area (PA117-4095), November 26, 1999."

[5] See Technical Support Document for the Proposed Approval of Pennsylvania's Post-96 Rate-of-Progress Plan for the Philadelphia Severe Ozone Nonattainment Area.

Pennsylvania attainment demonstration cannot be approved unless the RACT requirement is satisfied. Many of the larger sources are covered by the Commonwealth's NOx Budget rules under the Phase II provision of the OTC MOU or the NOx SIP call. The Commonwealth's analysis did consider applying controls to sources smaller than the 25 TPY major source threshold. In general, these consist of smaller combustion units for which control is generally not cost effective. See the memorandum entitled "De Minimis Values for NOx RACT" G. T. Helms, Group Leader, Ozone Policy and Strategies Group (MD-15), to the Air Branch Chiefs, Region I - X, dated January 1, 1995.

A large number of the considered measures have the potential to achieve benefits but at a high cost-effectiveness: these are measure numbers 34, 42b, 44 to 46, 51 to 59, 62, 69 to 70, 71 to 73, 74, 96, and 122.

Measure number 116 would have banned residential lawn care activities on high ozone days. No costs were identified as applying to the affected operators. However, this measure is episodic, and the voluntary mobile source emission reduction programs guidance from EPA to allow SIP credit for such episodic measures was not issued until after the analysis ended in January 1997.[6] And for any other control measures, EPA does not believe that Congress intended the RACM requirement to compel the adoption of measures that are absurd, unenforceable, or impracticable (see 55 FR 38326, September 18, 1990). Until EPA issued the voluntary mobile source emission reduction programs guidance which addressed the enforceability issues with such a measure, the measure presented large enforcement concerns.

However, EPA believes that its revised RACM interpretation would provide for the rejection of control measures as not reasonably available for various reasons related to local conditions even where such costs fell short of substantial widespread impact. This is especially true in the absence of a presumption that any given measure is per se reasonably available. See 57 FR 13498, April 16, 1992. Several of the considered measures have the potential for substantial widespread and long-term adverse impacts, or for various reasons related to local conditions, such as economics or implementation concerns. These include 39, 78 and 79. These involve pricing mechanisms such as an 84 cent per gallon gasoline tax or emission based registration fees which may have a disproportionate impact on lower socio-economic groups.

For the remaining measures, the estimated benefits add up to 40 tons per day of VOC and 19 TPD NOx. These would constitute the following percentages of the reductions (relative to the 1990 base year not including the benefits from the Federal Tier 2/Sulfur rule) 17% of the VOC reductions and 11 % of the NOx reductions. Using the ozone response factors above, the air quality benefit for the remaining measures would be under 2.4 ppb for the VOC and under 3 ppb for the NOx response. (40TPD VOC /(16.84 ton/ppb) = 2.34 ppb; 19 TPD NOX/(6.53 ton/ppb)

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[6] See the October 27, 1997, memorandum, "Guidance on Incorporating Voluntary Mobile Source Emission Reduction Programs in State Implementation Plans (SIPs)", from Richard D. Wilson, Acting Assistant Administrator for Air and Radiation.

= 2.95 ppb.)

Since the air quality shortfall is 3.9 ppb, these remaining measures would not advance the attainment date.

VI. Recommendations

Therefore, I recommend we propose approval of the RACM analysis.